APPENDIX D

T-RACT ANALYSIS

P-060100

MEMORANDUM

DATE: March 13, 2006

TO: Bill Rogers, DEQ Regional Permit Coordinator, Air Program
Kevin Schilling, DEQ Stationary Source Modeling Coordinator, Air Program

FROM: Cheryl Robinson, Permit Writer, Air Program

PROJECT NO: P-060100

SUBJECT: Facility ID No. 777-00372, Norm's Utility Contractor, Inc., Rathdrum
Portable Hot Mix Asphalt Plant
PTC Application, T-RACT Applicability and Emission Limit Determination

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During permit development and verification modeling for this PTC, DEQ identified that the emissions estimates for polycyclic organic matter (POM) from the drum dryer, asphalt tank heater, and silo filling and loadout from this hot-mix asphalt (HMA) plant were estimated exceeded the screening emissions level (EL) increment, and that modeling predicted that the ambient air impact due to POM would exceed the acceptable ambient concentration for carcinogens (AACC) listed in IDAPA 58.01.01.586.

POM: IDAPA 58.01.01.586 screening EL = 2.60E-06 pounds per hour
Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene considered together as one toxic air pollutant (TAP), equivalent in potency to benzo(a)pyrene.

Proposed T-RACT:

Operational and throughput limits
No credit taken for POM removal in drum dryer fabric baghouse
Good operation and maintenance practices, including:
- Annual inspection and maintenance on the drum dryer burner, and
- Annual inspection and maintenance and other maintenance as necessary on the fabric filter baghouse.

Cost Effectiveness, $/ton POM, normalized to 1: Proposed T-RACT (1.0), RTO (10.6), Afterburner (15.9)

DEQ Determination: Based on a review of the applicant's submittal, DEQ has determined that the applicant has proposed T-RACT for control of POM emissions from the HMA plant. The steps below describe how DEQ determined the emission standard constituting T-RACT for this case.

POM emissions: 4.21E-04 pounds per hour and 0.505 pounds per year based on:
Drum dryer – HMA throughput of 250 tons per hour, 1,200 hours per year
Tank heater –at max. heat input capacity of 2.115 MMBtu, 6,720 hours per year
Silo filling and loadout – HMA throughput of 250 tons per hour, 1,200 hours per year

POM emissions, Avg. Hourly: 3.41E-04 pounds per hour, based on:
Drum dryer (lb/hr) x 10 hrs/24 hrs and Tank heater (lb/hr) x 18.5 hrs/24 hrs
Silo filling and loadout (lb/hr) x 24 hrs/24 hrs

The proposed T-RACT ambient concentration of 0.00148 $\mu g/m^3$ is less than or equal to the amount of the TAP that would contribute an ambient air cancer risk probability of less than one to one hundred thousand (1:100,000), i.e., a level that is 10 times the applicable acceptable ambient concentration for carcinogens (AACC) listed in Section 586. In accordance with IDAPA 58.01.01.212.b, no further procedures for demonstrating preconstruction compliance are required for POM emissions as part of the application process.

$$\mathbf{0.00148\ \mu g/m^3 < 0.00304\ \mu g/m^3} = 10 \times 3.04\text{E-}04\ \mu g/m^3\text{, the AACC for benzo(a)pyrene}$$

T-RACT Emission Standards: Permit conditions shall be established to limit the operational hours, HMA throughput, and total POM emissions to no more than the values used in DEQ's verification modeling analysis.

DE/AFS/SF

P.O. Box 2047
Coeur d'Alene, Idaho 83816

Norm's
UTILITY CONTRACTOR, INC.

(208) 667-7496
FAX (208) 765-5083

RECEIVED

MAR 14 2006

DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE A.Q. PROGRAM

DEQ
Regional Permit Program Coordinator
Air Quality Division ATTN: Cheryl Robinson
1410 N. Hilton
Boise, ID 83706

DEQ received an electronic copy of the T-RACT analysis from Rick McCormick of CH2M HILL on March 9, 2006, but submittal of any information in support of a permit application must also be certified as true, accurate, and complete by a responsible official at the company. The certification language is:

In accordance with IDAPA 58.01.01.123 (Rules for the Control of Air Pollution in Idaho), I, Tom Mattix, certify based on the information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

SIGNATURE: Tom Mattix DATE: 3/14/06

CH2M HILL
322 East Front Street
Suite 200
Boise, ID 83702-7359
Tel 208.345.5310
Fax 208.345.5316

CH2MHILL

March 8, 2006

Idaho Department of Environmental Quality
1410 North Hilton
Boise, Idaho 83706-1255

Dear Ms. Cheryl Robinson:

Subject: POM T-RACT Analysis
15-Day Pre-Permit to Construct HMA Application
Norm's Utility Contractor, Inc., Rathdrum, Idaho

On behalf of Norm's Utility Contractor, Inc., CH2M HILL is submitting supplemental information to support the 15-Day Pre-Permit to Construct Hot-Mix Asphalt (HMA) Application submitted to the Idaho Department of Environmental Quality (IDEQ) in January, 2006. This information addresses the modeled ambient air exceedence of Polycyclic Organic Matter (POM) emissions from certain pieces of storage or operating equipment at the site. This submittal constitutes a T-RACT (Toxics Reasonably Achievable Control Technology) analysis for the POM emitted from the hot mix asphalt (HMA) liquid asphalt tank, the rotary mixer emissions control baghouse and the HMA product storage silo. POM emissions are a subset of the larger Volatile Organic Compounds (VOC) category.

CH2M HILL has prepared a T-RACT analysis for determining what level of control could reasonably be achieved for POM emissions. The T-RACT must be technically feasible, environmentally sound, and economically achievable. If a control technology is not feasible, the standard may be based on a work practice, among other considerations. Idaho T-RACT regulations are found at IDAPA 58.01.01.210.14. This review presents our analysis and T-RACT conclusions.

CH2M HILL has included a summary of POM T-RACT analysis and data in Attachment A. This attachment considers the use of two POM control technologies beyond the "base-case." The base case is the proposed use of a high-efficiency fabric filter baghouse assembly coupled with good operation and maintenance practices on the POM emissions sources, the HMA storage silo and the rotary mixer baghouse assembly. The POM removal technologies considered are the use of a gas-fired afterburner and the use of a gas-fired RTO. The use of wet scrubbers was considered and rejected due to their low or unreliable POM removal efficiencies.

The Norm's Utility Contractor site is to be constructed in Rathdrum, Idaho. The installation would be for the manufacture, storage and transfer of up to 250 tons per hour of HMA. The HMA facility is a plant where aggregates are blended, heated, dried, and then combined with liquid asphalt to produce a paving material in a continuous process. This HMA is used for road surfaces, runways, erosion control and other typical paving applications. HMA is produced by drying well-graded aggregate in a direct gas-fired, inclined rotary drum. Aggregate dries as it travels down the drum whereupon liquid asphalt is added to the aggregate and mixed as the aggregate travels the rest of the length of the drum. The resulting HMA is discharged at the end of the mixer and conveyed to a storage silo. Trucks are filled from the silo as needed. The liquid asphalt is stored in an adjacent gas-fired, indirect heated tank. Gas volumes and temperatures are necessarily high in a rotary drum mixer to dry large quantities of aggregate, achieve good blending to the liquid asphalt and the aggregate and keep the HMA plastic and flowing through the mixer and conveyor to the storage silo. Gas flows for this system will be 52,800 acfm with exhaust gas temperatures of 330 degrees Fahrenheit (F). The only fuel used at the site is natural gas. A complete process description with schematics was provided in the 15-Day Pre-Permit Approval Application dated January, 2006.

POMS are emitted in very small amounts from the heated asphalt storage tank, the baghouse assembly associated with the rotary mixer and the HMA storage silo. Virtually all the POM is from the storage silo and the baghouse exhaust. POM concentrations for the combined sources are estimated to be 0.00148 micrograms per cubic meter, and 0.0068 pounds per day conservatively based on a 24 hour day. Norm's proposed operation of the HMA is for 10 hours per day. This review considered control of these sources for T-RACT.

EPA Clearinghouse Review

The Environmental Protection Agency (EPA) RACT/BACT/LAER (RBL) Clearinghouse was reviewed for information on HMA facilities. This review noted two sites, a 1996 entry for the Granite Construction Gardner Ranch and a 1999 entry for the Santa Fe Aggregates facility. The Granite Construction site was not assigned a VOC emission limit and had ROC (Reactive Organic Compounds) controls for the dryer as "good combustion practice" and an O2 controller. The storage silo, conveyor and truck loading points were noted as "blue smoke filter packs." No designation of either RACT, BACT or LAER was noted for this installation.

The Santa Fe Aggregates site was designated as LAER, and contained a specific VOC limitation of 0.0516 pounds per MMBTU and 43 pounds per day with no other specific control information noted.

T-RACT Review

1. Norm's Utility Base Case

The Norm's Utility HMA plant will have a high-efficiency fabric baghouse assembly for the control of emissions from the rotary dryer. The baghouse assembly will provide particulate emissions control and also some POM control due to gas cooling and VOC condensation.

For the purposes of this review, the POM efficiency for the baghouse was conservatively set at 0 percent removal. Norm's will provide good combustion and maintenance practices to minimize POM emissions. These good operation and maintenance practices will include at least annual inspection and maintenance on the gas-fired rotary dryer burner and other maintenance as needed. Good operation and maintenance will also be performed on the fabric filter baghouse assembly and include at least annual inspection and maintenance and other maintenance as necessary to maintain good pollutant emissions control. A base case cost estimate was performed for good operation and maintenance and estimated that the annual maintenance cost would be $442,325 for labor and materials. This equated to a cost per ton of POM of $71.85 MM$/ton of POM emitted. This high cost per ton is a function of the extremely low emissions of POM in the base case. This cost per ton is compared to additional POM control systems.

2. Thermal Oxidizer - Afterburner

A thermal oxidizer afterburner may be used to control VOC emissions form some sources. An afterburner is typically a refractory-lined chamber where exhaust gases from a process or combustion unit are additionally heated to a high temperature to achieve additional thermal decomposition of the VOC. Duct burners are typically installed ahead of the chamber to provide the additional heat. Temperatures in the afterburner chamber typically achieve 1600 to 1800 degrees F with a gas retention period of 1 to 3 seconds. The afterburner for this review was sized to accommodate a 50 acfm flow from the HMA storage silo and a 52,800 acfm flow from the baghouse assembly exhaust for a total gas flow of 52,850 acfm. Removal efficiencies of VOC for afterburner systems are typically 95% and higher. Due to the very large gas flow and the relatively low baghouse exhaust temperatures (330 degrees F), a large afterburner and heat input is required. Natural gas heat input to a device operating at 1600 degrees F with a 2 second residence time is estimated at 60 MMBTU/hour. The fuel costs alone render an afterburner to be infeasible. Based on the above parameters, the estimated annual gas cost is about $530,000 based on 2800 hours per year of operating time. The installed cost for the afterburner is estimated at about $149,000 and the combined total fuel, capital and operating costs push the cost-effectiveness for this option to over 1 billion dollars per ton. These costs do not include the additional cost of control of the collateral air pollutant emissions associated with the duct burner operation. Detailed costs for this afterburner option are contained in Attachment A. Due to the extreme energy and capital cost for this option, an afterburner is not technically feasible, economically achievable and environmentally sound for this site.

3. Thermal Oxidizer – Regenerative Thermal Oxidizer (RTO)

A RTO is a thermal destruction device that incorporates high temperatures and gas flows with energy recovery. RTO systems include a fan, burner assembly, heat exchange media, flow control valves, control systems, instrumentation and an exhaust stack. The system is essentially a multi-chamber ceramic component filled box with gas flow manifolds and valving that allow for the chambers to be used alternately for combustion or inlet gas pre-heating. Process gas with VOC contaminants enters the RTO through an inlet manifold. A flow control valve directs this gas into an energy recovery chamber which preheats the process stream. The process gas and contaminants are progressively heated in the stoneware bed as they move toward the combustion chamber.

The VOCs are then oxidized, releasing energy in the second stoneware bed, theoretically reducing the auxiliary fuel requirement. The ceramic bed is heated and the gas is cooled so that the outlet gas temperature is only slightly higher than the inlet temperature. The flow control valve switches and alternates the ceramic beds so each is in inlet and outlet mode. As the inlet bed cools to a set point due the pre-heating of the inlet process gas, the flow is reversed and the hot outlet bed is not used for pre-heating the gases. If the process gas contains enough VOCs, the energy released from their combustion allows self-sustained operation. The process HMA dryer gas contains very low concentrations of VOC and the combustion would not be self-sustaining. VOC removal efficiencies for RTOs are typically 99 percent. It is estimated that heat recovery for this system would be about 50%.

RTO installations are very expensive, especially for high flow rates such as the HMA plant. A cost estimate for a RTO design to accommodate 52,850 acfm at 1600 degrees F was made. The installed cost for this RTO is estimated at $598,000, annual fuel costs are estimated to be about $216,000 for a 2800 hour per year operation. Detailed costs for this RTO option are contained in Attachment A. The total cost per ton of POM removed utilizing a RTO is $760.94MM/ton. This analysis again did not include the cost or impacts of the collateral air emissions on the environment from the combustion of the natural gas. Due to the extreme energy and capital cost for this option, an RTO is not technically feasible, environmentally sound and economically achievable for this site.

Summary

Based on the above review of the base case and two types of thermal oxidation systems for POM control, only the base case meets the criteria of cost and technical feasibility. Cost per ton of POM removed for the thermal oxidizer systems were calculated at $760 million for a RTO to over 1 billion dollars per ton for an afterburner, and are not cost and technically feasible. The proposed base case standard is good operation and maintenance on the rotary mixer gas burner and the fabric filter baghouse assembly. This standard is consistent with the Idaho T-RACT regulations to allow for a work practice standard and the EPA RBL Clearinghouse application of "good combustion practice" at the single non-LAER HMA site in that database. Operation and maintenance to minimize emissions of POM will be performed as described in this review.

In accordance with IDAPA 58.01.01.123, "based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate and complete."

If there are any questions regarding this supplemental information please call Rick McCormick with CH2M HILL at (208) 383-6457.

Sincerely,

CH2M HILL

Allan Cawrse
Project Manager

Rick McCormick, P.E.
Project Engineer

Attachment A:

Cost Efficiency Summary

Afterburner Cost Analysis

RTO Cost Analysis

Base-Case Cost Analysis

Emissions Summary

cc: Bill Rogers, IDEQ-Boise
Rick McCormick, CH2M Hill – Boise

Summary of Control Cost Effectiveness

Pollutant	Control Technology	CostEffectiveness ($/ton controlled)
POM	Baghouse	$71,851,109
POM	RTO	$760,904,309
POM	Afterburner	$1,141,125,180

Attachment A - After Burner Cost-Effectiveness

Cost Item	Cost Factor	Reference	Cost (2005 $)
Direct Costs (Dc)			
Purchased Equipment Costs (PEC)			
Basic Equipment	As Estimated, A	Vendor Based Est. (incl. markup)	$95,000
Instrumentation	0.1 X A	(EPA 2002a, Sec. 1, Table 2-4)	$9,500
State Sales Taxes	Tax Rate X A	State Sales Tax	$0
Freight	0.05 X A	(EPA 2002a, Sec. 1, Table 2-4)	$4,750
PEC Subtotal (B)			$109,250
Direct Installation Costs (DIC)			
Foundations & Supports	0.08 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$8,740.00
Labor	0.14 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$15,295.00
Electrical	0.04 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$4,370.00
Piping	0.02 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$2,185.00
Insulation	0.01 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$1,093
Painting	0.01 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$1,093
DIC Subtotal			$32,775
Total Dc	PEC+DIC	-	$142,025
Indirect Costs (IDC)			
Engineering	0.10 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$10,925
Construction Overhead	0.05 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$5,463
Contractor Fees	0.10 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$10,925
Contingencies	0.03 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$3,278
Start-Up	0.02 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$2,185
Performance Testing	0.01 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$1,093
Total IDC		-	$33,868
Total Capital Investment (TCI)	Dc + IDC		$175,893

Operating Cost Factors

		Capital Recovery Factor (CRF)
Interest Rate	7%	
Equipment Life	10	0.144
Operating/Maintenance Labor $/hr	$35	
State Sales Tax (%)	0%	
Natural Gas (mBTU)	60000	

Cost Item	Cost Factor	Reference	Cost
Direct Annual Costs, $/Yr			
Operating Labor	8-hr shift	Estimate	$8,120
Supervisory Labor	15 % of operating labor	(EPA 2002a, Section 1, subs 2.5.5.2)	$1,218
Maintenance Labor	8-hr shift	Estimate	$8,120
Maintenance Materials	100 % of maintenance labor	(EPA 2002a, Section 1, subs 2.5.5.2)	$8,120
Cleaning	40 Man-hours per year	Estimate	$1,400
Natural Gas	$8 per MCF of BTU	Estimate	$530,286
Total Direct Annual Costs, $/yr			$557,264
Indirect Annual Costs, $/Yr			
Overhead	60% of All Labor & Maint. Costs	(EPA 2002a, Section 1, subs 2.5.5.7)	$15,347
Insurance & Administration	3% of TCI	(EPA 2002a, Section 1, subs 2.5.5.8)	$5,277
Capital Recovery	CRF X TCI	N/A	$25,329
Property Tax	1% of TCI	(EPA 2002a, Section 1, subs 2.5.5.8)	$1,759
Total Indirect Annual Costs, $/yr			$47,711
Total Annual Costs, $/Yr			$604,975

	Cr6+
Baseline Uncontrolled (TPY) (baghouse only)	5.89E-04
Total Controlled (TPY) w/ after burner (90% control)	5.89E-05
Total Net Reductions (TPY)	5.30E-04
Cost Effectiveness, $/Ton Controlled	$1,141,125,180

Attachment B - RTO Cost-Effectiveness

Cost Item	Cost Factor	Reference	Cost (2005 $)
Direct Costs (Dc)			
Purchased Equipment Costs (PEC)			
Basic Equipment	As Estimated, A	NACAH Tech Estimate	$400,000
Instrumentation	0.1 X A	(EPA 2002a, Sec. 1, Table 2-4)	$40,000
State Sales Taxes	Tax Rate X A	State Sales Tax	$0
Freight	0.05 X A	(EPA 2002a, Sec. 1, Table 2-4)	$20,000
PEC Subtotal (B)			$460,000
Direct Installation Costs (DIC)			
Foundations & Supports	0.08 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$36,800.00
Labor	0.14 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$64,400.00
Electrical	0.04 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$18,400.00
Piping	0.02 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$9,200.00
Insulation	0.01 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$4,600
Painting	0.01 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$4,600
DIC Subtotal			$138,000
Total Dc	PEC+DIC	-	$598,000
Indirect Costs (IDC)			
Engineering	0.10 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$46,000
Construction Overhead	0.05 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$23,000
Contractor Fees	0.10 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$46,000
Contingencies	0.03 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$13,800
Start-Up	0.02 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$9,200
Performance Testing	0.01 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$4,600
Total IDC		-	$142,600
Total Capital Investment (TCI)	Dc + IDC		$740,600

Operating Cost Factors For The RTO System

		Capital Recovery Factor (CRF)
Interest Rate	7%	
Equipment Life	10	0.144
Operating/Maintenance Labor $/hr	$35	
State Sales Tax (%)	0%	
Natural Gas (mBTU/hr)	30000	

Direct Annual Costs, $/Yr			
Operating Labor	8-hr shift	Estimate	$8,120
Supervisory Labor	15 % of operating labor	(EPA 2002a, Section 1, subs 2.5.5.2)	$1,218
Maintenance Labor	8-hr shift	Estimate	$8,120
Maintenance Materials	100 % of maintenance labor	(EPA 2002a, Section 1, subs 2.5.5.3)	$8,120
Refractory Cleaning	40 Man-hours per year	Estimate	$1,400
Natural Gas	$8 per MCF of BTU	Estimate	$265,143
Total Direct Annual Costs, $/yr			$292,121
Indirect Annual Costs, $/Yr			
Overhead	60% of All Labor & Maint. Costs	(EPA 2002a, Section 1, subs 2.5.5.7)	$15,347
Insurance & Administration	3% of TCI	(EPA 2002a, Section 1, subs 2.5.5.8)	$22,218
Capital Recovery*	CRF X TCI	N/A	$106,646
Property Tax	1% of TCI	(EPA 2002a, Section 1, subs 2.5.5.8)	$7,406
Total Indirect Annual Costs, $/yr			$151,617
Total Annual Costs, $/Yr			$443,738

Baseline Uncontrolled (TPY) (baghouse)	5.89E-04	
Total Controlled (TPY) w/ RTO	5.89E-06	(99% additional reduction)
Total Net Reductions (TPY)	5.83E-04	
Cost Effectiveness, $/Ton Controlled	$760,904,309	

Attachment C - Baghouse Base Case

Cost Item	Cost Factor	Reference	Cost (2005 $)
Direct Costs (Dc)			
Purchased Equipment Costs (PEC)			
Basic Equipment	As Estimated, A	NACAH Tech Estimate	$0
Instrumentation	0.1 X A	(EPA 2002a, Sec. 1, Table 2-4)	$0
State Sales Taxes	Tax Rate X A	State Sales Tax	$0
Freight	0.05 X A	(EPA 2002a, Sec. 1, Table 2-4)	$0
PEC Subtotal (B)			$0
Direct Installation Costs (DIC)			
Foundations & Supports	0.06 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$0.00
Labor	0.14 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$0.00
Electrical	0.04 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$0.00
Piping	0.02 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$0.00
Insulation	0.01 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$0
Painting	0.01 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$0
DIC Subtotal			$0
Total Dc	PEC+DIC	-	$0
Indirect Costs (IDC)			
Engineering	0.10 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$0
Construction Overhead	0.05 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$0
Contractor Fees	0.10 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$0
Contingencies	0.03 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$0
Start-Up	0.02 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$0
Performance Testing	0.01 X B	(EPA 2002a, Sec. 3.2, Table 2-8)	$0
Total IDC		-	$0
Total Capital Investment (TCI)	Dc + IDC		$0

Operating Cost Factors

		Capital Recovery Factor (CRF)
Interest Rate	7%	
Equipment Life	10	0.144
Operating/Maintenance Labor $/hr	$35	
State Sales Tax (%)	0%	
Natural Gas (mBTU/hr)		

Cost Item	Cost Factor	Reference	Cost
Direct Annual Costs, $/Yr			
Operating Labor	8-hr shift	Estimate	$8,120
Supervisory Labor	15 % of operating labor	(EPA 2002a, Section 1, subs 2.5.5.2	$1,218
Maintenance Labor	8-hr shift	Estimate	$8,120
Maintenance Materials	100 % of maintenance labor	(EPA 2002a, Section 1, subs 2.5.5.2	$8,120
Refractory Cleaning	40 Man-hours per year	Estimate	$1,400
Natural Gas	$4 per MCF of BTU	Estimate	$0
Total Direct Annual Costs, $/yr			$26,978
Indirect Annual Costs, $/Yr			
Overhead	60% of All Labor & Maint. Costs	(EPA 2002a, Section 1, subs 2.5.5.7	$15,347
Insurance & Administration	3% of TCI	(EPA 2002a, Section 1, subs 2.5.5.8	$0
Capital Recovery*	CRF X TCI	N/A	$0
Property Tax	1% of TCI	(EPA 2002a, Section 1, subs 2.5.5.8	$0
Total Indirect Annual Costs,			$15,347
Total Annual Costs, $/Yr			$42,325

Baseline Uncontrolled (TPY) (bag?	5.89E-04
Total Net Reductions (TPY)	5.89E-04
Cost Effectiveness, $/Ton Controlled	$71,871,109

APPENDIX E

PERMIT PROCESSING FEE ASSESSMENT

P-060100

Permit to Construct Processing Fee

Facility ID/AIRS No.:	**777-00372**
Permit No.:	**P-060100**
Spreadsheet Date	3/13/2006 17:05
Facility Owner/Company:	**Norm's Utility Contractor, Inc, Rathdrum, Portable HMA**
Address:	P.O. Box 2047
City, State, Zip:	Coeur d'Alene, Idaho 83816
Facility Contact:	Tom Mattix
Contact Number:	(208) 661-5076
Contact E-mail:	

Permit to Construct Category (IDAPA 58.01.01.225)	Fee
General permit, no facility-specific requirements (Defined as source category specific permit for which the Department has developed standard emission limitations, operating requirements, monitoring and recordkeeping requirements, and that require minimal engineering analysis.	$500
New source or modification to existing source with increase of emissions < 1 ton per year (TPY)	$1,000
New source or modification to existing source with increase of emissions < 10 tons per year	$2,500
New source or modification to existing source with increase of emissions < 100 tons per year	$5,000
Nonmajor new source or modification to existing source with increase of emissions of 10 TPY to less than 100 TPY.	$7,500
New major facility or major modification.	$10,000
Permit modifications where no engineering analysis is required.	$250
Application submittals for exemption applicability determinations, types, name and ownership changes (see 224.01, .02., and .03)	$0

Portable Hot Mix Asphalt Facility PTE Based on:

A. Drum Mix Plant: 250 Tons/hour 1,200 Hours/year 300,000 Tons/year HMA throughput
Maximum emission for each pollutant from any fuel-burning option analyzed in this evaluation.
B. Tank Heater: 2.1160 MMBtu Rated 8,760 Hours/year
Maximum emission for each pollutant for heater burning any fuel analyzed in this evaluation.
C. Generator: 0 gal/hour 0 Hours/year Small or Large Generator using Diesel Fuel
Maximum emission for each pollutant for generator burning any fuel analyzed in this evaluation.
D. Load-out, Silo Filling, and Asphalt Storage Fugitive Emissions for PM: Is Facility Subject to NSPS? **Yes**
Load-out, silo filling and asphalt storage are not point sources. Fugitive emissions are NOT included in PTE for any source.

Instructions: Input answers to the following questions with a Y or N.

N	Does this facility qualify for a general permit (i.e., concrete batch plant, hot-mix asphalt plant)? Y/N
Y	Did this permit require engineering analysis? Y/N
N	Is this a PSD permit? (IDAPA 58.01.01.205) Y/N

Annual Emissions of Regulated Pollutants (total PTE from HMA facility)

IDAPA 58.01.01.xx	Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
006.82. c	PM (total)	5.0	0	5.0
006.82. b, c	PM-10 (total)	3.5	0	3.5
006.82. b, c	PM-2.5 (total)	0.4	0	0.0
006.82.a, b	CO	20.1	0	20.1
006.82.a, b	NOx	4.6	0	4.6
006.82. b	SO_2	0.5	0	0.5
006.82. b	Ozone (VOCs)[7]	4.8	0	4.8
006.82. b	Lead	9.6E-05	0	9.6E-05
006.82. a	HAPs	0.8	0	0.8
			Total Increase (T/yr):	34.4
			Fee Amount based on Emission Increase:	$5,000
			Fee Due (reflects answers to questions above):	**$5,000**

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